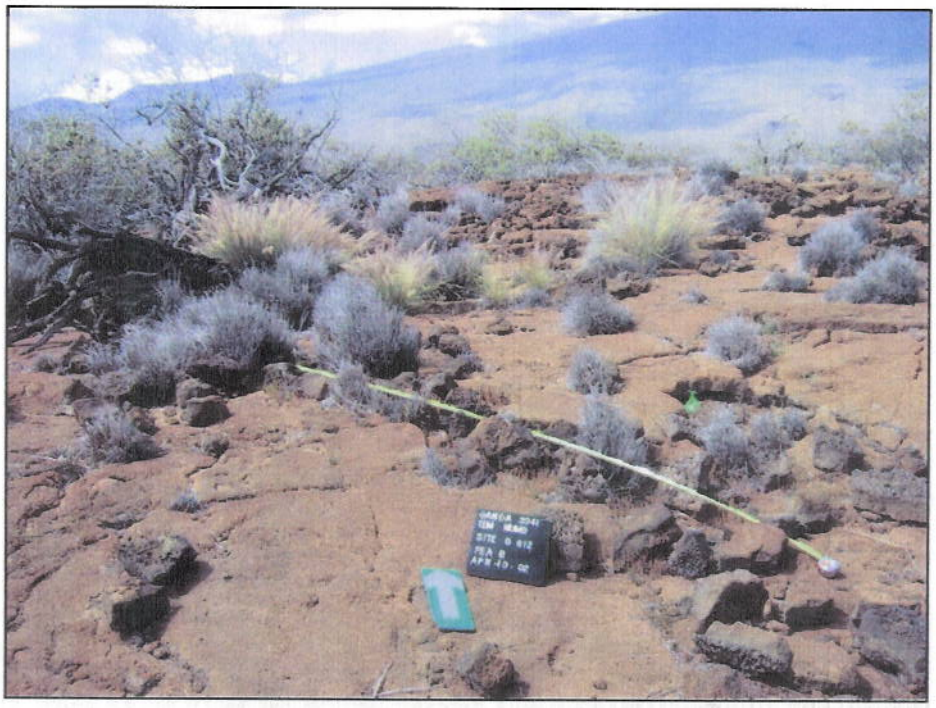

Figure 24. Photograph of Site 23455, Feature 156.

These 24 features were grouped under a single site number due to their similar location on the k2 lava flow and, with exception of one pit further west, their relatively clustered locations. The site boundary reflects this grouping. No phase II work was conducted at the site because adequate data had been previously collected to determine NRHP eligibility (i.e., Roberts *et al.* 2004b).

The pit features are tentatively classified as bird hunting pits created by pre-Contact Hawaiians around existing bird nest in natural caverns. This interpretation fits well with the historic contact of the Saddle Region that indicates *ua'u* (Hawaiian Petral) was a primary food resource exploited by Hawaiians in the Saddle Region.

The pits are characterized by roughly circular or elongated depressions with excavated rock materials overturned inside and/or scattered (sometime roughly piled) along the perimeter of the pit. The caverns exposed in the pits average around 0.3 m high. The excavated areas range between 1.0 m and 2.0 m in diameter. Deposition is rare within excavated pits and is limited to extremely shallow wind-blown deposits. A summary of the 24 features are provided in Table 9. Representative samples of the features were previously mapped outside of the project area (see Roberts *et al.* 2004b).

Table 9. Site 23455 Features

Fea. No	GANDA Site	Size Range (m)	No. of Pits
151	607	0.6 x 0.6	2
152	608	1.17 x 1.1	1
153	609	0.9 x 1.4	9
154	610	0.9 x 0.9	3
155	611	1.8 x 0.9	1
156	612	1.8 x 1.9	2
157	613	1.2x 0.6	2
158	614	2.6 x 0.9	1
159	615	1.0 x 0.9	1
160	689	0.5 x 0.5	1
161	606	2.7 x 2.7	1

Site 50-10-31-23456		**GANDA Site:**	605
Site Type:	Enclosure	**Training Area:**	5
Function:	Limited-use occupation		
Possible age:	Pre-Contact		
No. of Features:	1		
Site Size:	2.5 m x 3.6 m (0.00008 hectare)		
Cultural Material:	Hammerstones, bird cooking stone		
Condition:	Fair; partly collapsed architecture		
Historic Context:	Traditional Hawaiian occupation (*ca.* AD 780 to Contact)		
Significance:	D: *Information potential*; site yielded important information regarding material culture and surface architecture indicative of short-term occupation at PTA.		
Recommendation:	Avoidance and protection during all SBCT-related projects.		

Description: Site 23456 is an enclosure built on an undulating *a'ā* flow (Figures 25 and 26), on the southeast side of a gradual slope. The site is located in the northeast corner of BAX, roughly 870 m north of Lava Road. The site boundary is determined by the perimeter of the enclosure.

The enclosure is rectangular and roughly 3.5 m square on the exterior. Its wall is built of *a'ā* cobbles and small boulders ranging from 0.4 m to 1.0 m wide and a maximum 0.6 m high. A 3-course facing is preserved in the southeast corner, suggesting the rest of the enclosure had a similar construction. The enclosure floor is a level *a'ā* surface. Three hammerstones (Art. 16.1, 17.1, and 18.1) were collected from the surface of the site. One elongated hammerstone (Art. 18.1) was probably also used as a bird cooking stone. Two test units (TU1 and TU2) were excavated inside the enclosure and described below.

Site 23456 Testing Results

TU1 was a 0.5 m by 0.5 m unit placed inside the east corner of the enclosure. The unit was excavated to a maximum depth of 43 cmbs, where it was terminated because of the absence of cultural material and increasingly rocky matrix. One soil layer (Layer I) was identified in the excavation (Figures 27-29):

Layer I: (43 cm thick) dark brown to dark yellowish brown (10YR 3/3.5) loam; weak, fine crumb; loose non-coherent, non-sticky, non-plastic; few rootlets; 90% cobbles.

No cultural materials were recovered from TU1. Layer I was composed mostly of *a'ā* lava rock and a small amount of undeveloped windblown and organic sediments that filtered downward through the *a'ā*. The actual wall of the enclosure appeared to be embedded in the underlying *a'ā* to a maximum depth 20 cm below the ground surface.

TU2 was a 0.5 m by 0.5 m unit placed at the center of the enclosure on roughly level *a'ā*. The unit was excavated to a maximum depth of 33 cmbs, where it was terminated because of the absence of cultural material and consistent rocky matrix. Layer I, as outlined in TU1 above, was the only layer identified in this unit. No cultural materials were present.

Discussion

The presence of the three traditional artifacts on the surface confirms the site is traditional Hawaiian in origin and, in combination with the size and architecture of the enclosure, reflects short-term occupation. The lack of subsurface material may indicate the occupation is more recent (late pre-Contact) or that the natural substrate has a slow rate of deposition, or both.

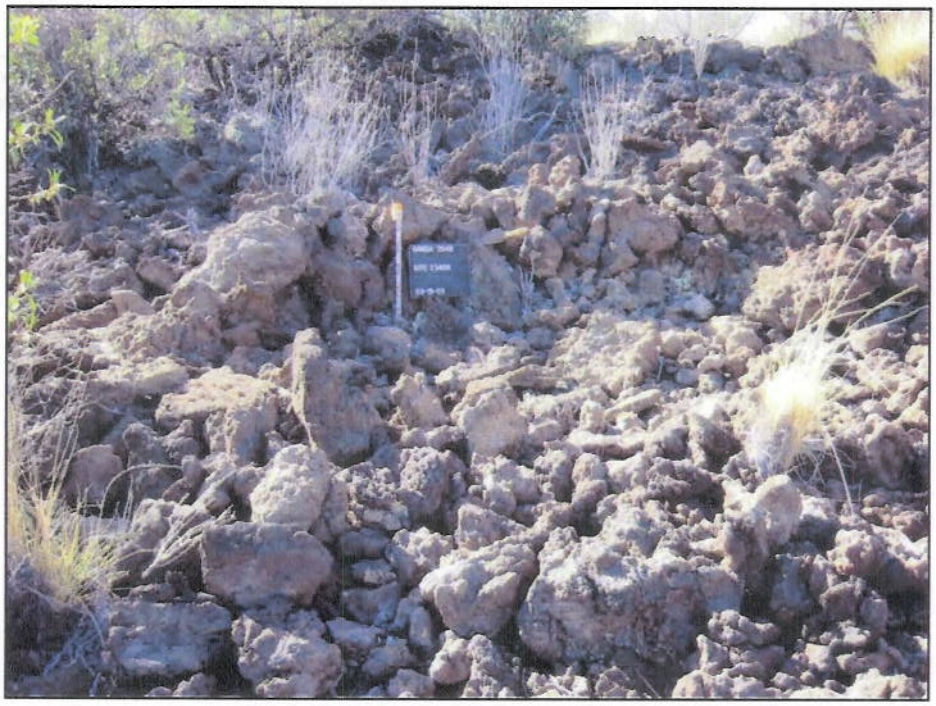

Figure 25. Site 23456 Enclosure; View Southeast

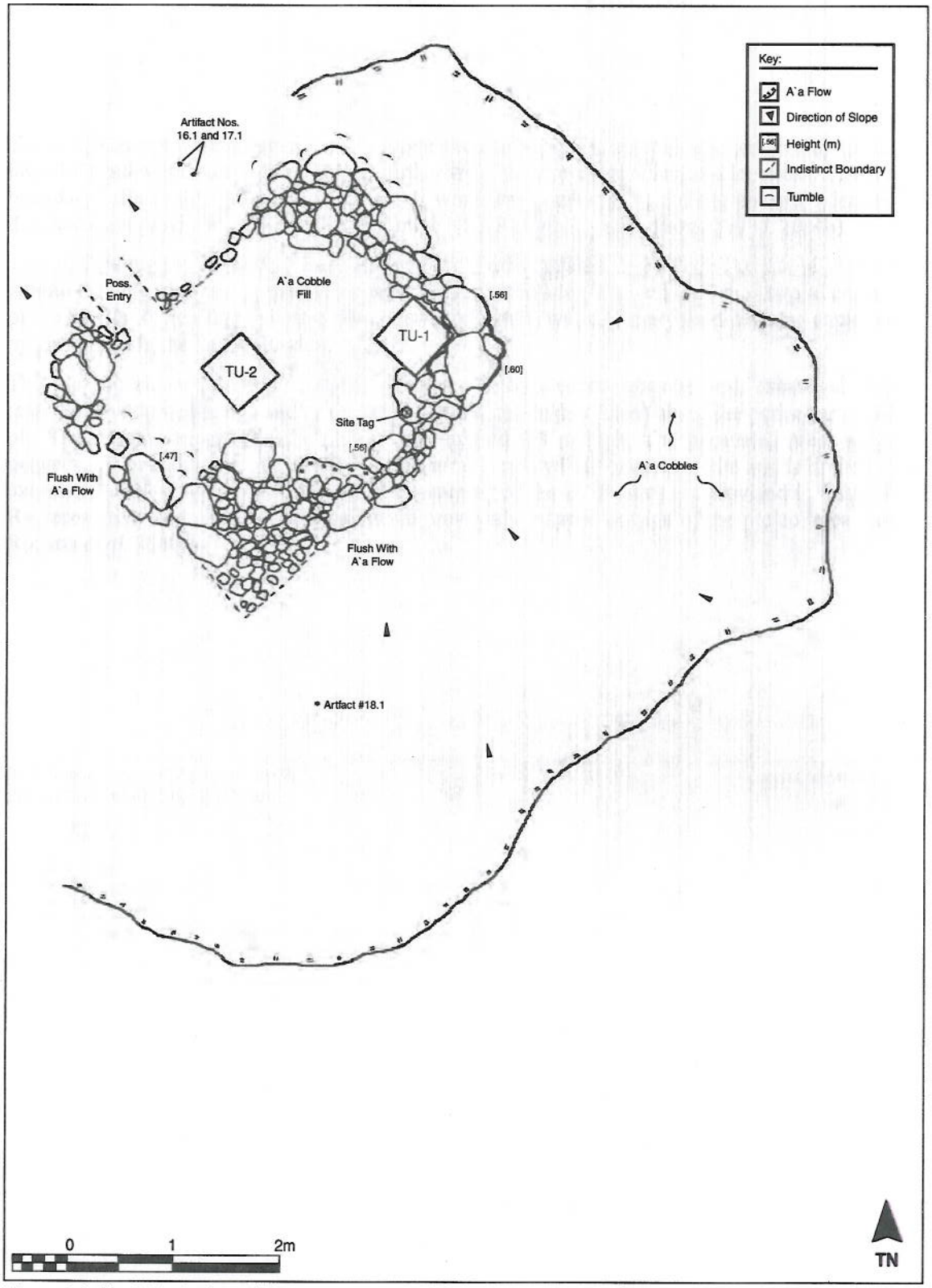

Figure 26. Site 23456; Plan View

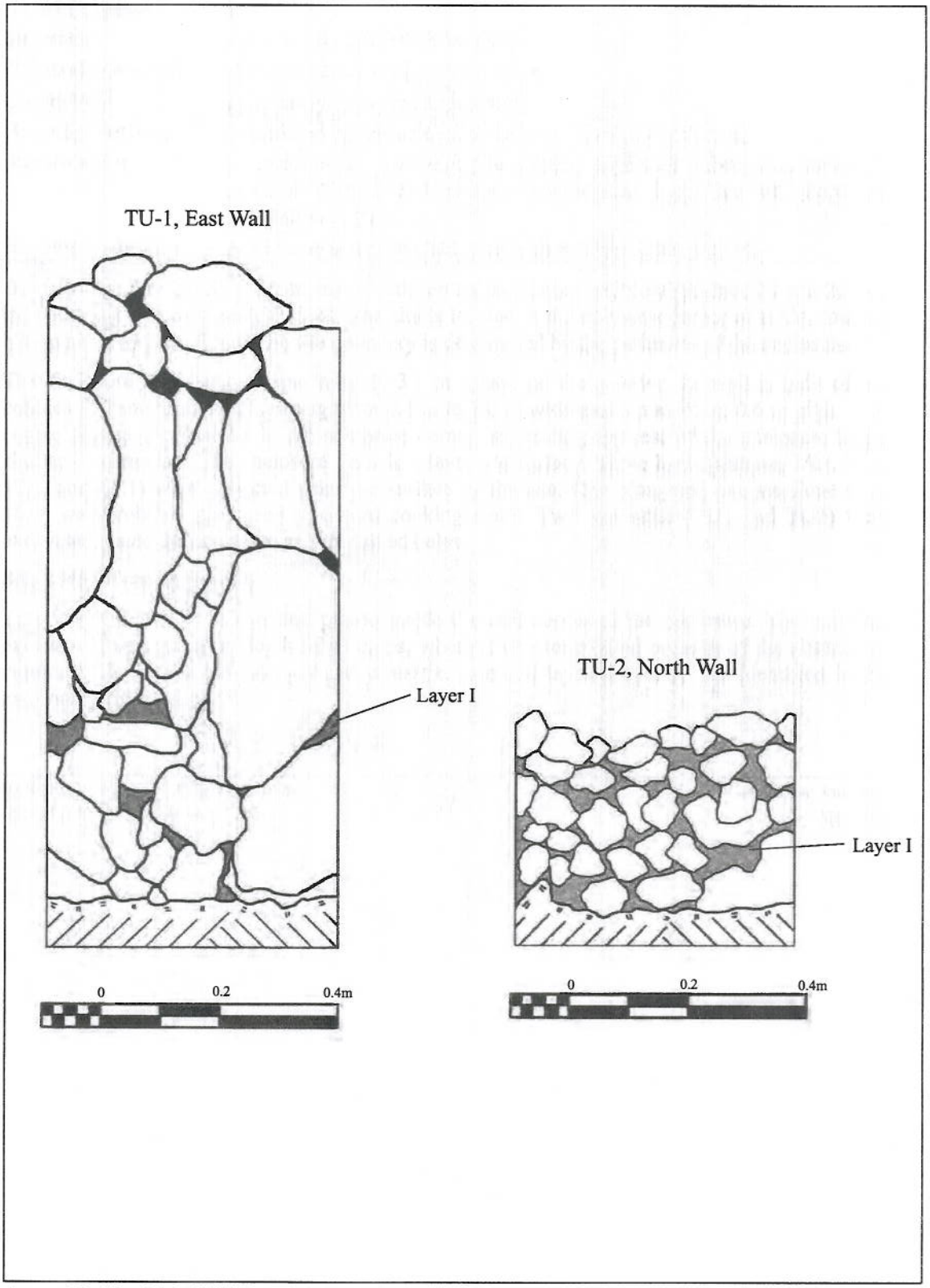

Figure 27. Site 23456; TU1 and TU2 Profiles

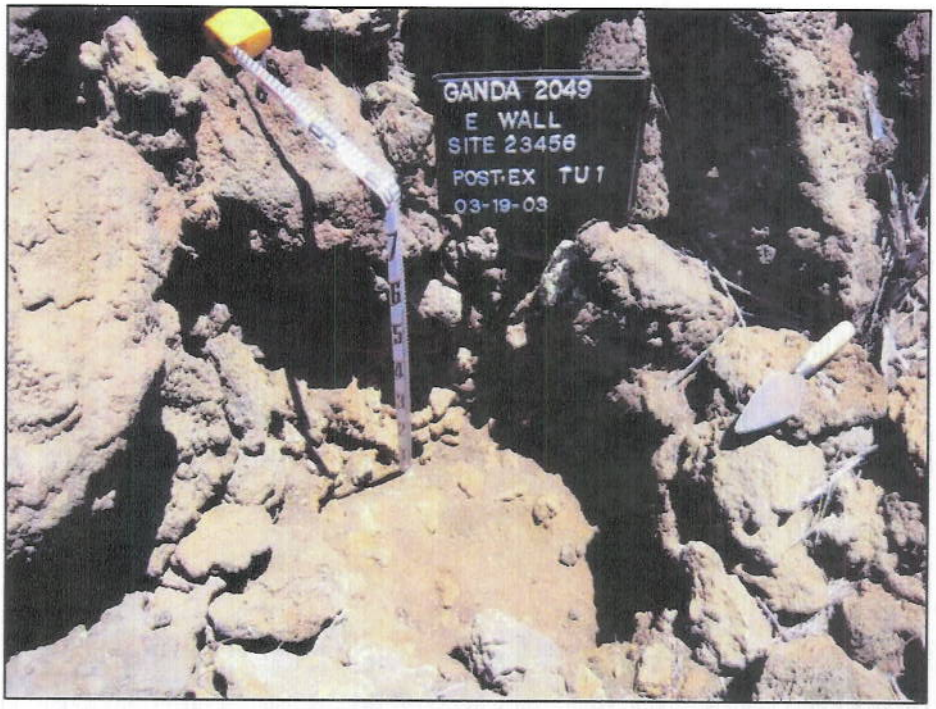

Figure 28. Site 23456, TU1 Base of Excavation

Figure 29. Site 23456, TU2 Base of Excavation

Site 50-10-31-23457		**GANDA Site:**	616
Site Type:	Trail and cairns	**Training Area:**	5
Function:	Transportation		
Possible age:	Pre-Contact		
No. of Features:	5		
Site Size:	95.0 m 15.0 m (0.01 hectare)		
Cultural Material:	None observed		
Condition:	Fair to good; partly collapsed architecture		
Historical Context:	Travel and resource procurement in Saddle (Pre-Contact to *ca.* 1866)		
Significance:	D: *Information potential*; site yields important location and construction data regarding pre-Contact travel routes in the Saddle.		
Recommendation:	Avoidance and protection during all SBCT-related projects.		

Description: Site 23457 is a trail (Feature 1) aligned NW/SE along the interface between an *a'ā* flow from Mauna Loa (k2 flow) and an older *a'ā* flow from Mauna Kea (l flow) (Figures 30-33). Four rock cairns are aligned and clustered along the southwest portion of the trail. Two of the cairns (Features 1 and 2) were identified during the Phase I survey (Roberts *et al.* 2004a) and the other two (Features 4 and 5) were recently documented by PTA Cultural Resources staff (J. Head, Personal Communication 2005). The site boundary is determined by the locations of Feature 1 on the north, east and south sides, and Feature 5 on the west side. No photographs were taken of Feature 2 or 3 during the Phase I or II studies.

Feature 1 trail has a similar orientation as another Hawaiian foot trail (Site 19490, Feature F) located roughly 400 m to the southeast. Although no indications of the trail were found in the archival record (e.g., historic maps and oral traditions), it is plausible that Site 23457 once served as a main pre-Contact travel route across the Saddle that also provided access to bird nesting areas (e.g., Sites 23455 and 23621 in the BAX) and volcanic glass quarries (e.g., Sites 23458, and 23669-23671 in the BAX). The adjacent cairns may have been constructed as markers allowing wayward travelers to locate the trail section from afar.

Feature 1 trail is defined by a linear, trodden surface in the *a'ā* lined along the perimeter with larger cobbles. The trail is 1.0 m wide and spans a maximum of 98.3 m long.

Feature 2 cairn is on the north side of the trail. It measures 0.75 m by 0.70 m by 0.70 m high. It is composed of three *a'ā* cobbles piled on top of each other.

Feature 3 cairn is roughly 15 m southeast of Feature 2 and 1.6 m from the southwest edge of the trail. It is 0.6 m by 0.5 m and is situated approximately 1.6 m from the southern trail edge. This feature is constructed of two *a'ā* cobbles piled on top of each other.

Feature 4 cairn is 7.0 m southwest of Feature 3. It is constructed of small to large *a'ā* cobbles piled 2 courses high. It is 1.0 m by 0.8 m by 0.45 m high.

Feature 5 cairn is 2 m west of Feature 4. It is constructed of medium to large *a'ā* cobbles piled 2 courses high. It is 1.0 m by 0.8 m by 0.25 m high.

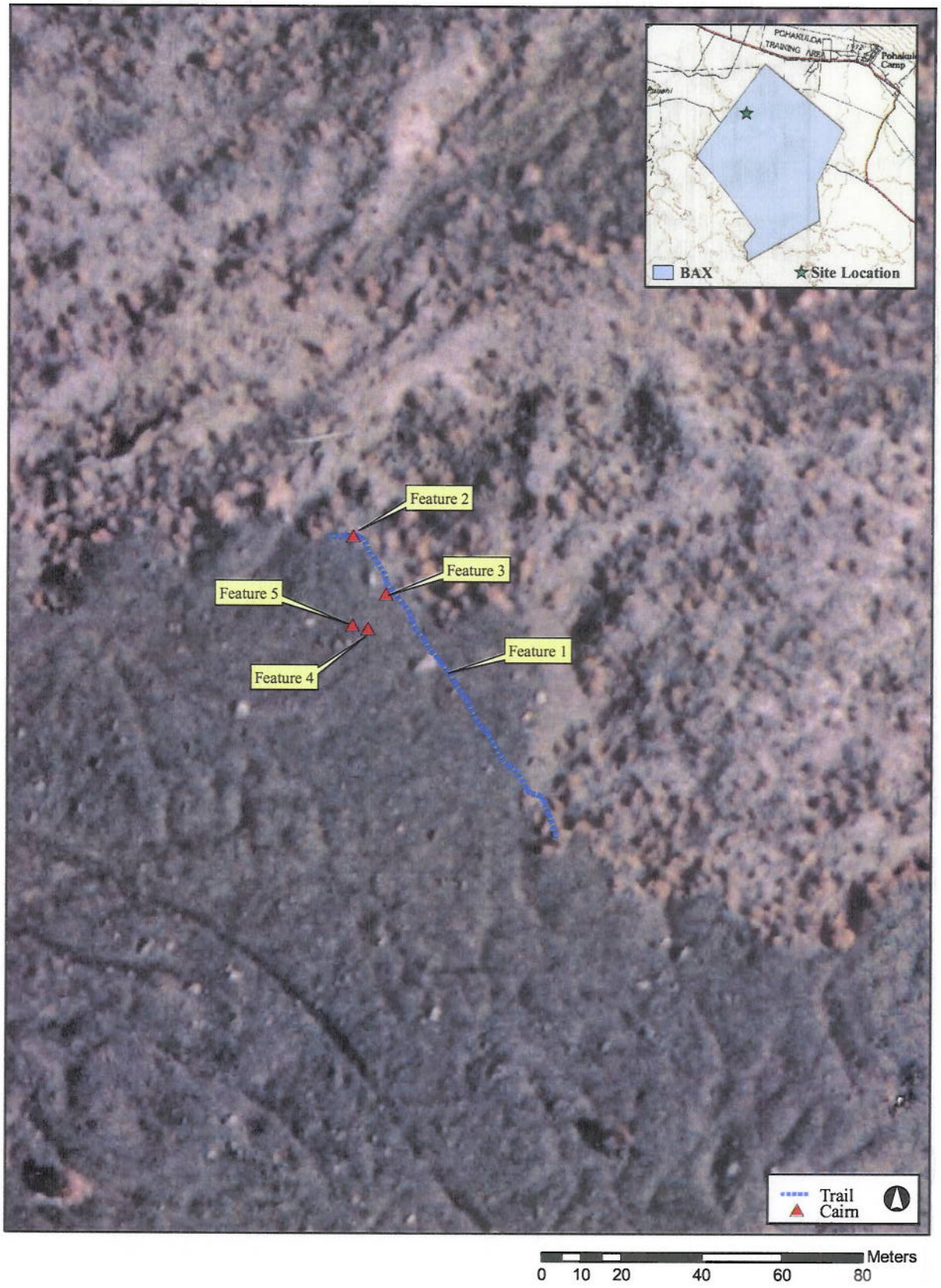

Figure 30. Site 23457 Complex on Orthophoto and USGS Quadrangle

Figure 31. Site 23457 Trail (Feature 1)

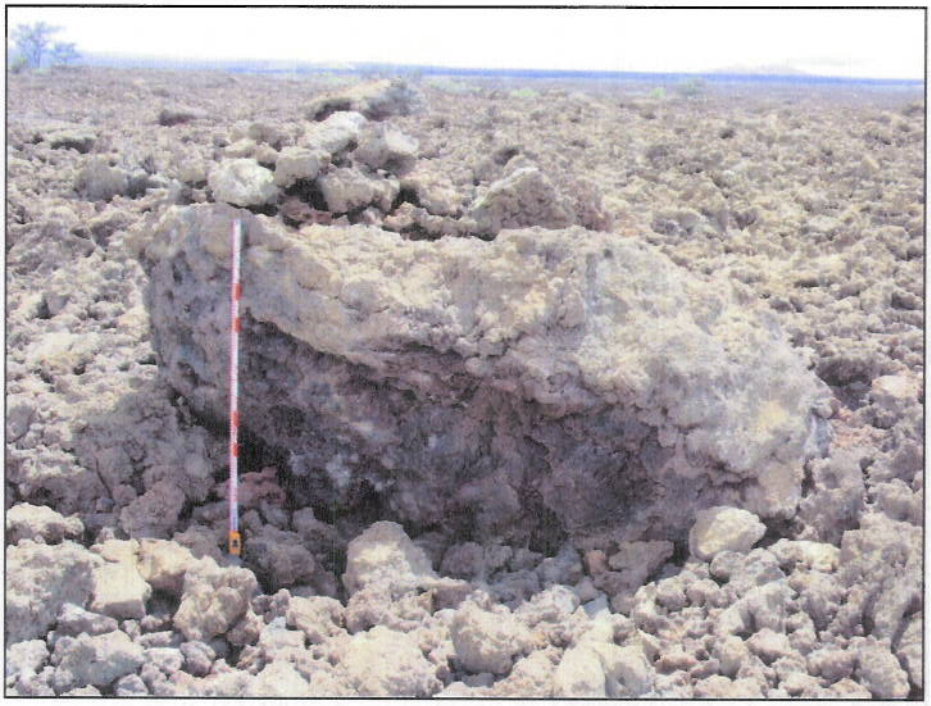

Figure 32. Site 23457, Feature 4 Cairn

Figure 33. Site 23457, Feature 5 Cairn

Site 50-10-31-23458		**GANDA Site No:** 650-656, 672-676	
Site Type:	Modified lava flow	**Training Area:**	Impact Area
Function:	Volcanic glass quarry complex		
Possible age:	Post-dates k4 lava flow (330 years ago)		
No. of Features:	14		
Site Size:	1125m x 635m (6.6 hectares)		
Cultural Material:	Quarry debitage		
Condition:	Fair; possible impacts from life-fire training		
Historic Context:	Resource procurement in Saddle (pre-Contact)		
Significance:	D: *Information potential*; site yielded important scientific data regarding quarry methods, potential sourcing data, and distribution patterns beyond the Saddle Region.		
Recommendation:	Avoidance and protection during all SBCT-related projects.		

Description: Site 23458 is composed of 14 volcanic glass quarries located in a *pāhoehoe* flow (k4 flow) formed 330 years before present (Sinton 2004). Additional quarries previously recorded as Site 21671 are located immediately southeast of the site inside the AALFTR Extension area. Both sites are part of a larger quarry complex on the k4 flow east of Redleg Road (Roberts *et al.* 2004b; Williams 2002). The site area is within the impact area and ordnance and fragmented metal was observed throughout the site. The boundaries of all fourteen quarries were mapped using a gps (Figure 34). The 14 quarries are combined into a single site because of their close proximity to each other.

The sizes of the individual quarries vary depending on the extent of the glassy crusts (Figures 35-38). Many of the quarries occur along ropey surfaces and vertical faces formed by uplifted lava.

Table 10 below provides a summary of the site features.

Table 10. Summary of Site 23458 Volcanic Glass Quarry Features

Feature No	GANDA Site	Size
1	650	16 m x 13 m
2	651	17 m x 14 m
3	652	22 m x 17 m
4	653	7 m x 4 m
5	654	11 m 20 m
6	655	20 m x 20 m
7	656	29 m x 23 m
8	672	2 m x 5 m
9	673	38 m x 26 m
10	674	42 m x 24 m
11	675	49 m x 27 m
12	676	11 m x 14 m
13	New	6 m x 11
14	New	15 m x 12 m

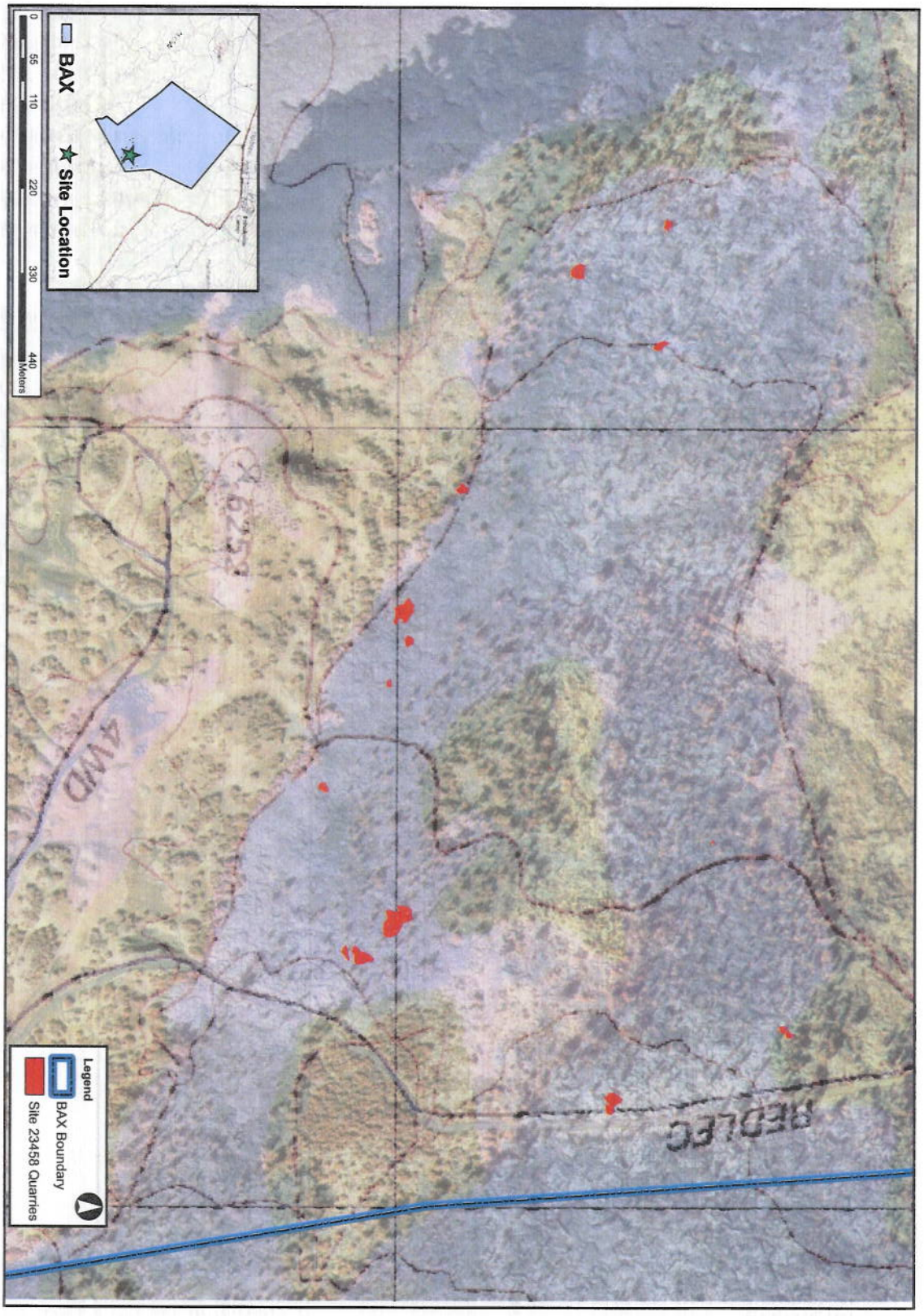

Figure 34. Site 23458; Distribution of Quarries on Orthophoto and USGS Quadrangle